SECTION 1

TWO-CHANNEL MASTER STATION

IC-2 MAX

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SECTION I
GENERAL INFORMATION

1.1 GENERAL DESCRIPTION

The IC-2MAX is a two-channel, two-line-dedicated master intercom station with a simultaneous talk/listen audio system for hands-free two-way communication, light-signal circuitry for silent two-way visual paging, and PA system access capability for general announcements by the station operator. The IC-2MAX also has auxiliary input, channel interrupt and line combine/isolate capabilities. The auxiliary input capability permits channel-selectable routing of an auxiliary program source to the intercom lines. The interrupt feature allows the station operator to interrupt the auxiliary program and break in on a channel for priority communications. The combine/isolate feature permits the two lines to intercommunicate, or operate independently.

The IC-2MAX may be powered from either a standard ac wall outlet or an external 25 Vdc, 2A power supply.

1.2 SYSTEM CONFIGURATIONS AND CONNECTIONS

Figure 1 illustrates a possible system configuration using the IC-2MAX. For more specific information concerning installation and operation of remote stations and accessories shown in the figure, refer to publication number 38108-998 which was also packed with your master intercom station.

1.3 SPECIFICATIONS

1.3.1 INTERFACE REQUIREMENTS

Dynamic Headset:	50-220 ohm microphone; 150-600 ohm headphones
Condenser Microphone:	6.8K ohm, -55 dB sensitivity (typical)
Speaker:	8 ohm, 3W
Auxiliary Program Source:	100 mV-10V RMS
Line Level:	1V RMS (0 dB) nominal
Impedance:	Supplies 300 ohms termination to line

1.3.2 HEADPHONE AMPLIFIER

Maximum Output:	12V p-p into 150 ohms (120 mW); 21V p-p into 600 ohms (90 mW)
Frequency Response (Line to Phones):	200 Hz - 7 KHz
Voltage Gain (Line to Phones):	Adjustable from 0-20 dB
Sidetone:	20 dB attenuation (fixed)

1.3.3 SPEAKER AMPLIFIER

Maximum Output:	3W into 8 ohms at 1% THD
Voltage Gain (Line to Speaker):	Adjustable from 0-14 dB

1.3.4 AUXILIARY AMPLIFIER

Input Impedance:	50K ohms balanced; 25K ohms unbalanced
Frequency Response (Auxiliary to line):	150 Hz-10 KHz
Voltage Gain (Auxiliary to Line):	Adjustable from 0-30 dB (Measured before onset of AGC limiting)
Common Mode Rejection:	40 dB

1.3.5 POWER SUPPLY

Output Voltage:	25V regulated
Output Current:	1 Amp maximum continuous per line; 2 Amp maximum continuous total

1.3.6 POWER REQUIREMENTS

Ac Operation	120V, 50-60 Hz, 75W maximum (may be modified for 220V or 240V operation)
Dc Operation:	25V, 2A maximum

1.3.7 DIMENSIONS

3.5 inches (89 mm) high x 8.25 inches (210 mm) wide x 11.25 inches (286 mm) deep

1.3.8 WEIGHT

9 lbs (4.1 kg)

1.3.9 AMBIENT TEMPERATURE

0 to 50 degrees centigrade

1.3.10 CONNECTORS

Headset Input:	One XLR-4M
Condenser Mic:	One 3-pin male
Auxiliary Input:	One XLR-3F
Stage Announce (PA Output):	One XLR-3F
Intercom Lines:	One XLR-3M and one XLR-3F wired in-parallel for each line One XLR-6F for both lines
Speaker:	One ¼-inch phone jack
External Power:	One 2-pin male (Jones type P300 AB)
Ac Power:	One 6-foot line cord with 3-pin U.S. grounding plug

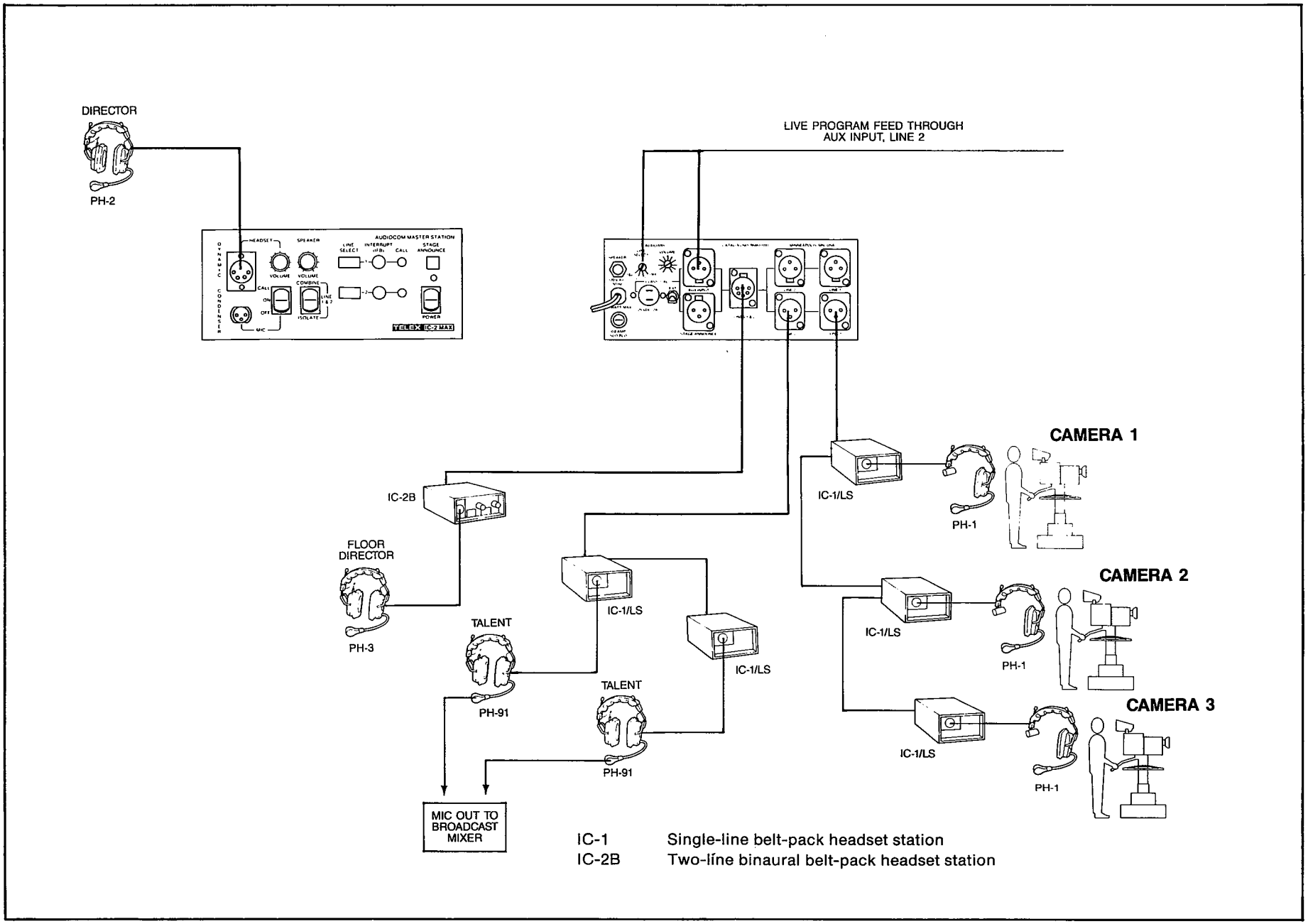
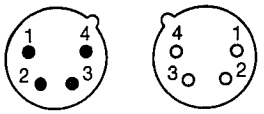
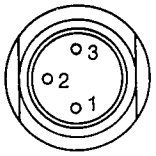
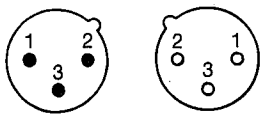
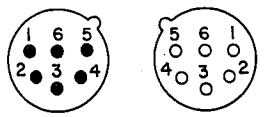
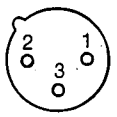
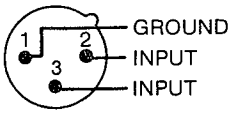
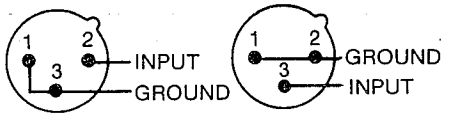
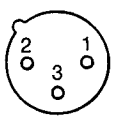
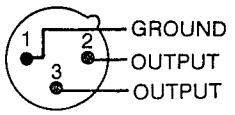
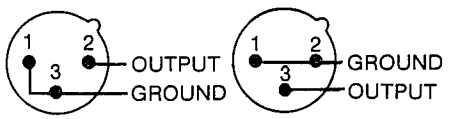


Figure 1. Typical System Interconnect Diagram

1.4 STANDARD CONNECTOR USAGE

Connector Function	Connector Type	Standard Usage	Comments
Monaural dynamic headset or mic	 XLR-4M XLR-4F	1 - Mic shield 2 - Mic hot 3 - Headphone hot 4 - Headphone shield	Do not connect the mic shield and headphone shield together.
Condenser microphone		1 - Bias/Audio 2 - Ground 3 - No connection	
External power source		Wide contact - Negative Narrow contact - Positive	24 Vdc nominal 12 Vdc minimum 30 Vdc maximum
Single intercom line	 XLR-3M XLR-3F	1 - Dc return (Ground) 2 - Intercom line 3 - Intercom line	Either intercom line wire may be connected to either connector contact 2 or 3.
Dual intercom line.	 XLR-6M XLR-6F	1 - Dc return. 2 - Not used. 3 - Intercom line 1. 4 - Intercom line 1. 5 - Intercom line 2. 6 - Intercom line 2.	Either line 1 wire may be connected to either connector contact 3 or 4.* Either line 2 wire may be connected to either connector contact 5 or 6.*
Auxiliary input	 XLR-3F	1 - Ground 2 - Balanced input 3 - Balanced input	 GROUND INPUT INPUT Balanced plug wiring  INPUT GROUND GROUND INPUT Unbalanced plug wiring
Stage announce	 XLR-3F	1 - Ground 2 - Balanced output 3 - Balanced output	 GROUND OUTPUT OUTPUT Balanced plug wiring  OUTPUT GROUND GROUND OUTPUT Unbalanced plug wiring
External speaker	¼-inch phone	Tip - Speaker hot Sleeve - Common	

SECTION II OPERATION

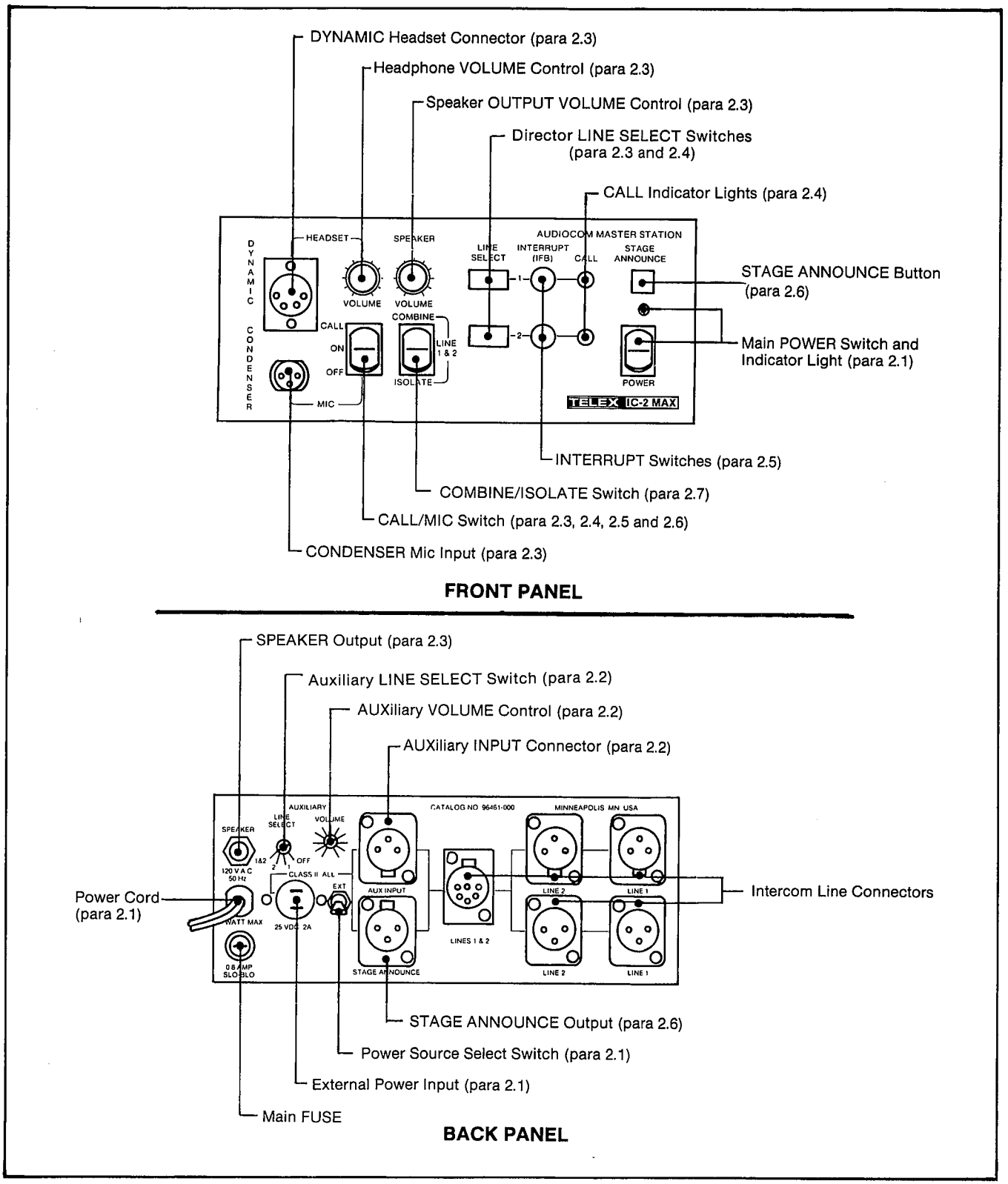
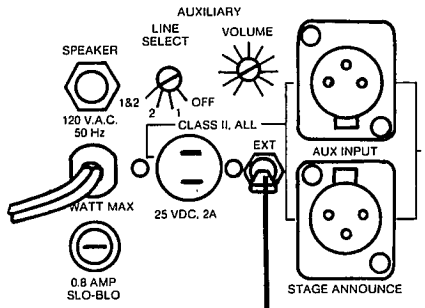


Figure 2. Reference Guide

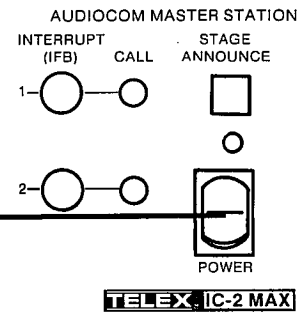
2.1 SUPPLYING POWER

2.1.1 Using Internal Supply

1. Plug the power cord into a wall outlet.



2. Set the rear panel power source select switch to INT.



3. Turn the front panel main POWER switch on. The yellow power indicator light above the switch should illuminate.

2.1.2 Using an External Supply

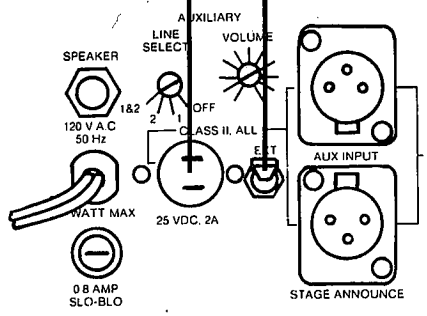
1. Set the power source select switch to EXT.

2. Plug the power supply into the 25 Vdc, 2A external power jack on the rear panel.

3. Turn on the external supply. The yellow power indicator light on the master station front panel should illuminate.

NOTE

The main power switch is inoperative when the power source select switch is set to EXT. Turn power on and off at the external supply.

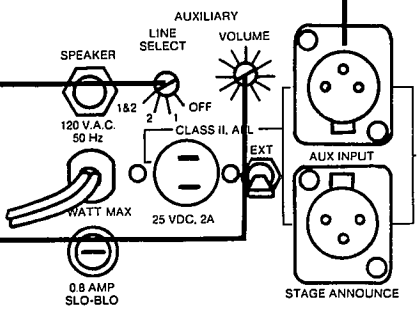


2.2 USING THE AUXILIARY INPUT

1. Plug the auxiliary program source into the AUX INPUT connector.

2. Assign the auxiliary program source to the desired line(s) with the LINE SELECT rotary switch.

3. Adjust the AUX VOLUME control for a comfortable listening level at intercom stations on the selected line(s).



2.3 VOICE COMMUNICATION

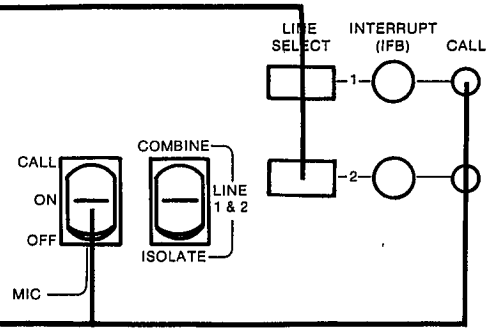
1. Set the desired front panel director LINE SELECT push-button switch(es) to the on position (⎍⎺⎺⎺

2.4 USING THE CALL FEATURE

2.4.1 Calling Remote Stations

1. Select the line(s) to be called by setting the appropriate director LINE SELECT switch(es) to the on position (⌐¬ on ⌐ off).

2. Press and hold the CALL/MIC switch in the CALL position. The call indicator light for each selected line should illuminate. Also, an inaudible signal is sent on each selected line to activate the call indicator lights on any connected remote stations.



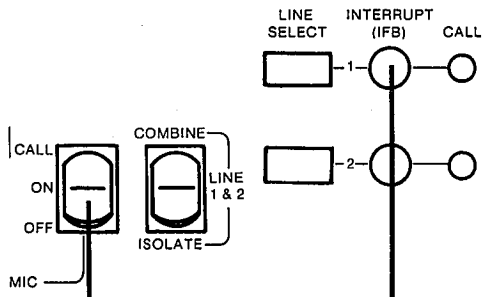
3. When a station responds verbally, release the call mic switch and it will automatically return to the ON position for normal two-way communication.

2.4.2 Receiving Call Signals

When a remote station calls the IC-2MAX, the appropriate call indicator light will illuminate. To respond, set the appropriate director LINE SELECT switch to the on position and set the CALL/MIC switch to ON, then proceed with normal two-way communication.

2.5 USING THE INTERRUPT FEATURE

The INTERRUPT switches are used primarily for momentary-type communications such as cueing on-the-air talent, or brief responses to received call signals. During interrupt, the auxiliary program source is disconnected from all lines, and the director is connected to the interrupted line. To use this feature:

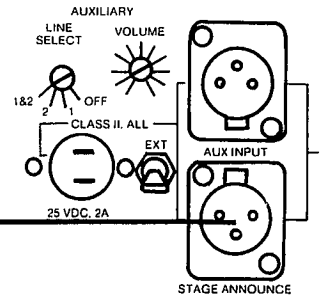


1. Set the CALL/MIC switch to ON.

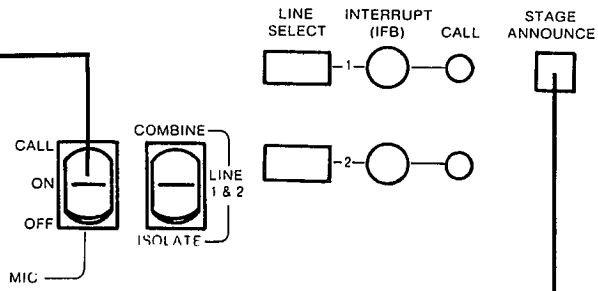
2. Press and hold the desired line INTERRUPT button while communicating.

3. Release the INTERRUPT button, when finished, to restore the auxiliary program and break the momentary communication link.

2.6 USING THE STAGE ANNOUNCE FEATURE



1. Connect the rear panel STAGE ANNOUNCE output to the PA system.

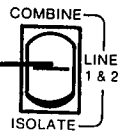


2. Set the CALL/MIC switch to ON.

3. Press and hold the STAGE ANNOUNCE button while speaking into the microphone.

2.7 USING THE COMBINE/ISOLATE SWITCH

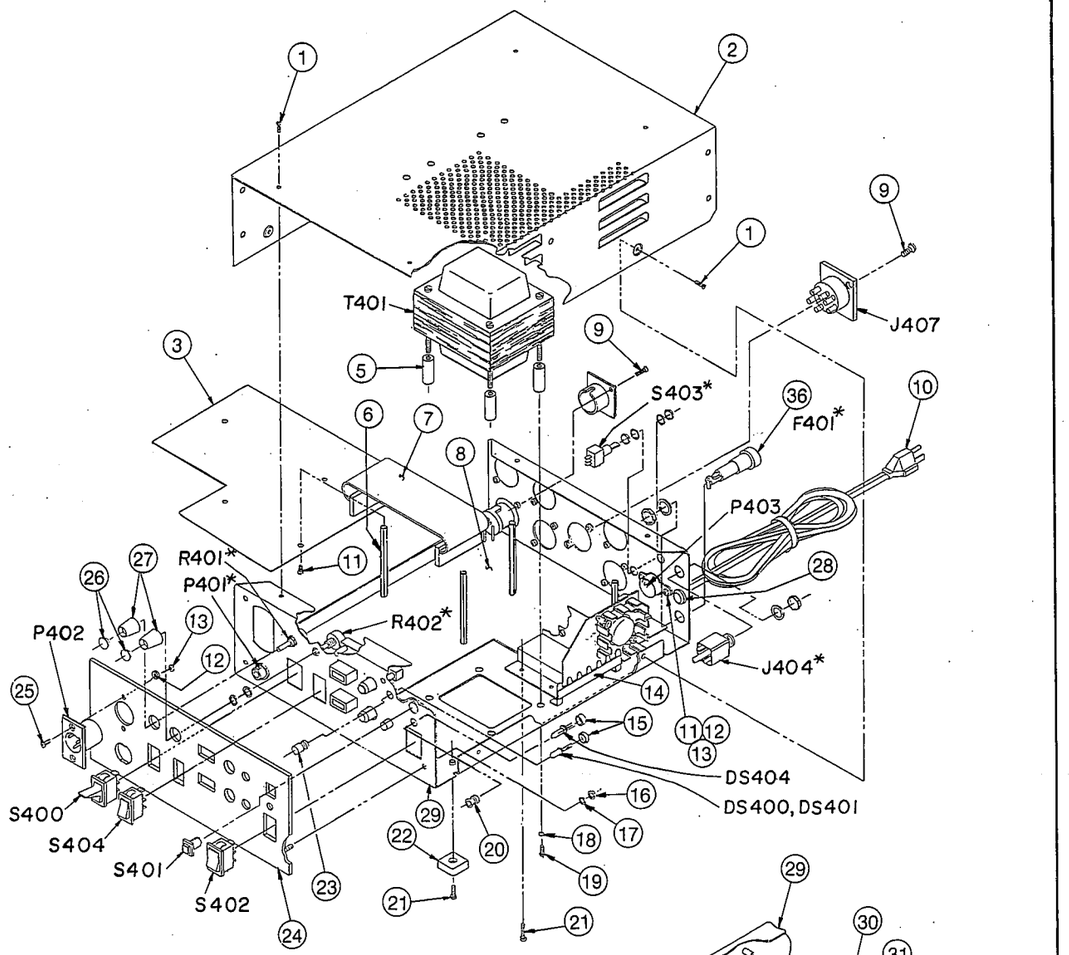
In the COMBINE position, intercom lines 1 and 2 may intercommunicate. In the ISOLATE position, lines 1 and 2 operate independently.



SECTION III
MAINTENANCE

CAUTION

THESE INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

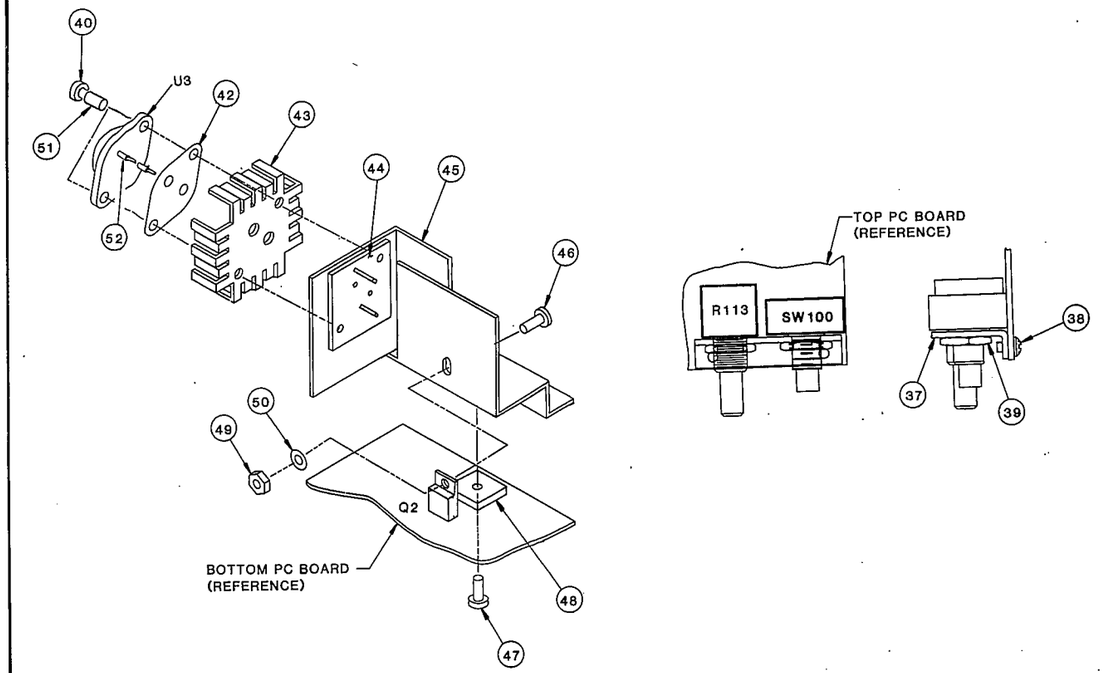


NOTE: SEE ELECTRICAL PARTS LIST FOR ELECTRICAL ITEMS.

* THIS PART SUPPLIED WITH MOUNTING HARDWARE.

96461, D

Figure 3. Mechanical Exploded View



3.1 MECHANICAL PARTS

ITEM NO.	DESCRIPTION	PART NO.
1	Screw, No. 4-40 x .25	51849-011
2	Cover, Staking & Finish Assy	96183-000
3	PC Board Assy, Top	96557-000
5	Transformer Support	96160-000
6	Threaded Standoff	96152-000
7	Ribbon Cable Assy	96181-000
8	PC Board Assy, Bottom	96559-000
9	Screw, No. 4-40 x .25	51847-011
10	Line Cord, SPT-2	52132-000
11	Screw, No. 4-40 x .375	51845-039
12	Washer, External Tooth No. 4	50049-003
13	Nut, Hex, No. 4-40	52188-006
14	Terminal Strip	52000-012
15	Nut, Mounting Clip	53627-002
16	Nut, Hex, No. 6-32	52188-008
17	Washer, External Tooth, No. 6	50049-001
18	Washer, External Tooth, No. 8	50049-002
19	Screw, No. 8-32 x .375	51845-111
20	Mounting Clip	53627-001
21	Screw, No. 4-40 x .25	51845-038
22	Bumper, w/Washer	51601-000
23	LED Lens, Red	59739-000
24	Front Panel, Finished	96462-000
25	Screw, No. 4-40 x .375	51847-112
26	Cap, Collet Knob, w/Line	53433-108
27	Knob, Collet w/Line	53432-102
28	Strain Relief	50489-033
29	Chassis, Finished	96561-000
30	Switch Mounting Bar	96184-000
31	Screw, No. 4-40 x .500	51845-041
32	Circuit Board Assy, Interrupt	96064-001
33	Circuit Board Assy, Director	96062-001
34	Screw, No. 2-56 x .375	51845-003
35	Ribbon Cable Assy, Split	96182-000
36	Fuse Holder	57074-003
37	Support Bracket	96186-000
38	Screw, Phil, No. 4-40 x .187	51845-055
39	Nut, Hex, No. 3/8-32	50033-001
40	Screw, Nylon, No. 6-32 x .375	51845-075
42	Insulator	50587-000
43	Heat Dissipator	89212-001
44	Socket, Power Transistor	50588-000
45	Heat Sink	96153-000
46	Screw, Nylon, No. 6-32 x .25	50983-001
47	Screw, No. 6-32 x .375	51845-075
48	Mica Insulator	52008-001
49	Nut, Hex, No. 6	52188-008
50	Lockwasher, Ext. Tooth, No. 6	50049-001
51	Heat Shrink Tubing	56093-000
52	Vinyl Tubing	25063-022

96461, J
96557, C
96559, K

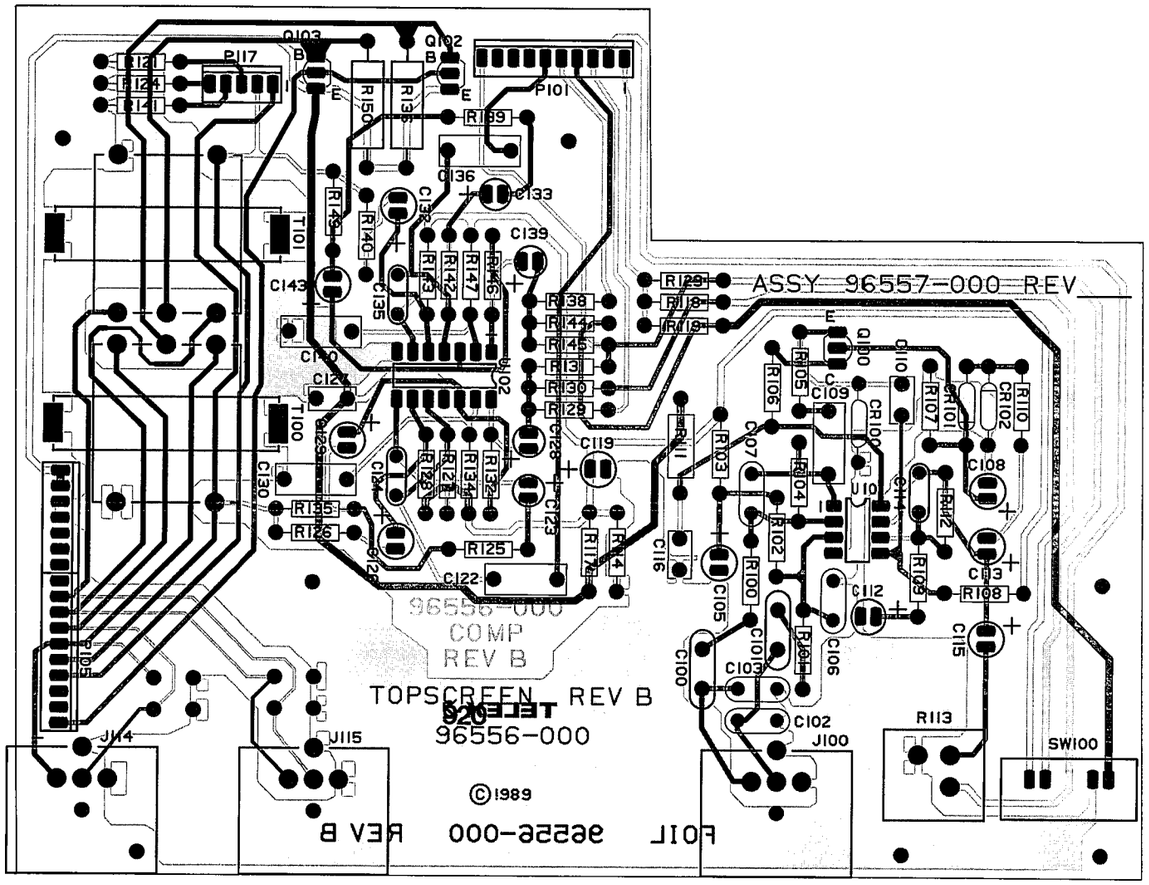


Figure 4. Top PC Board Assembly

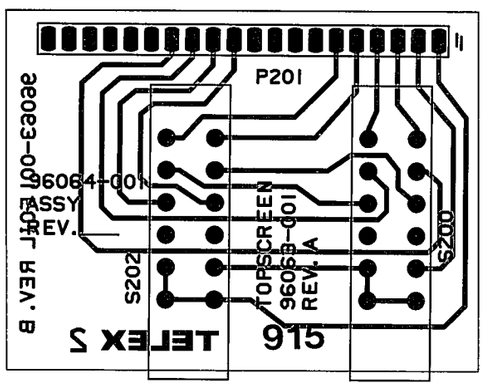


Figure 5. Interrupt PC Board Assembly

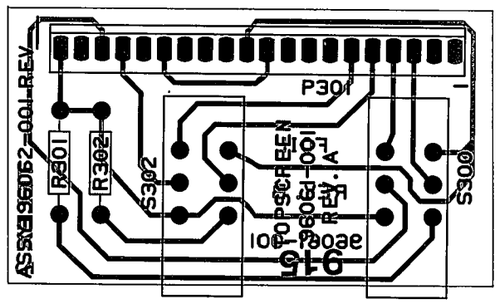


Figure 6. Director Circuit Board Assembly

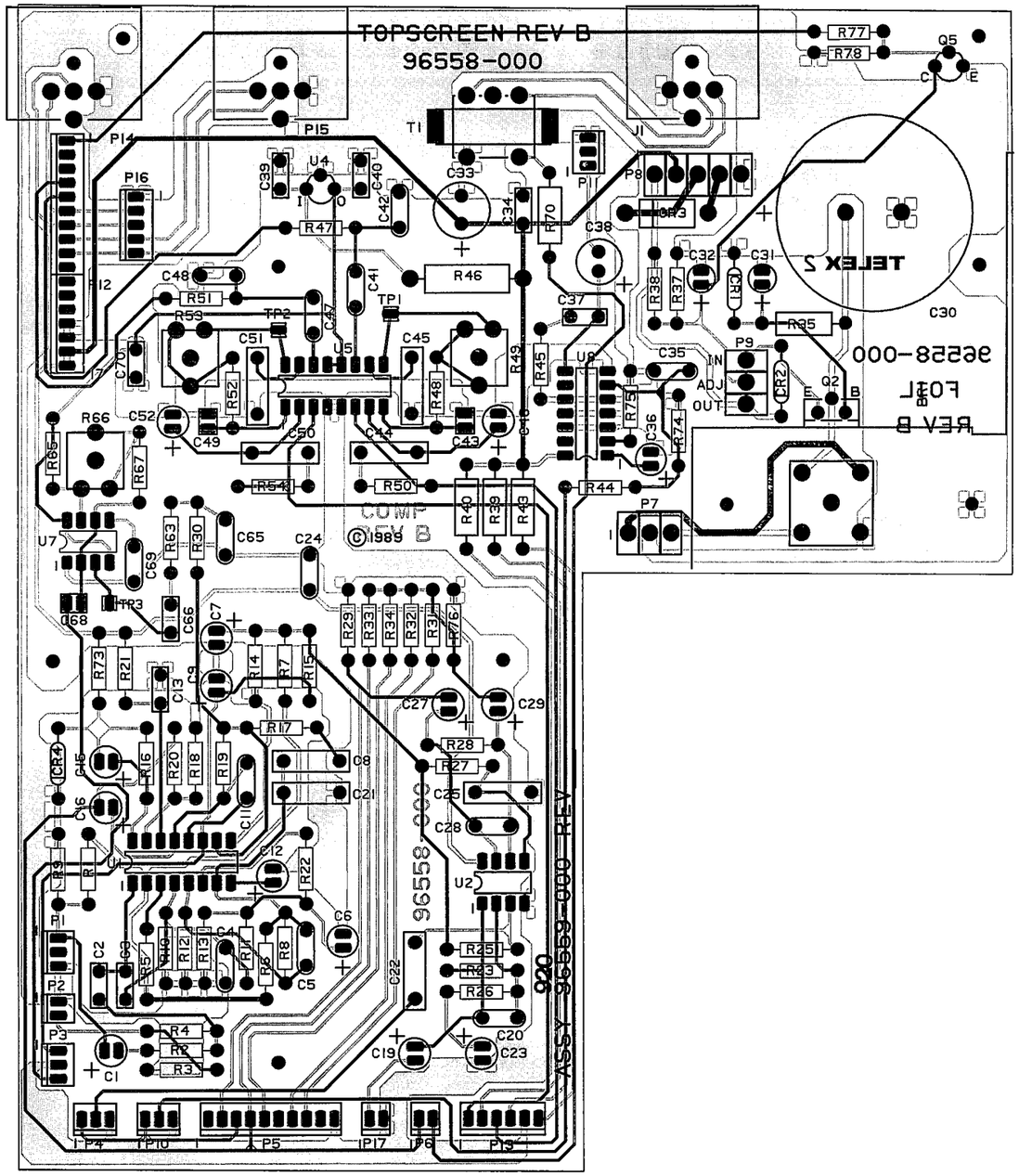
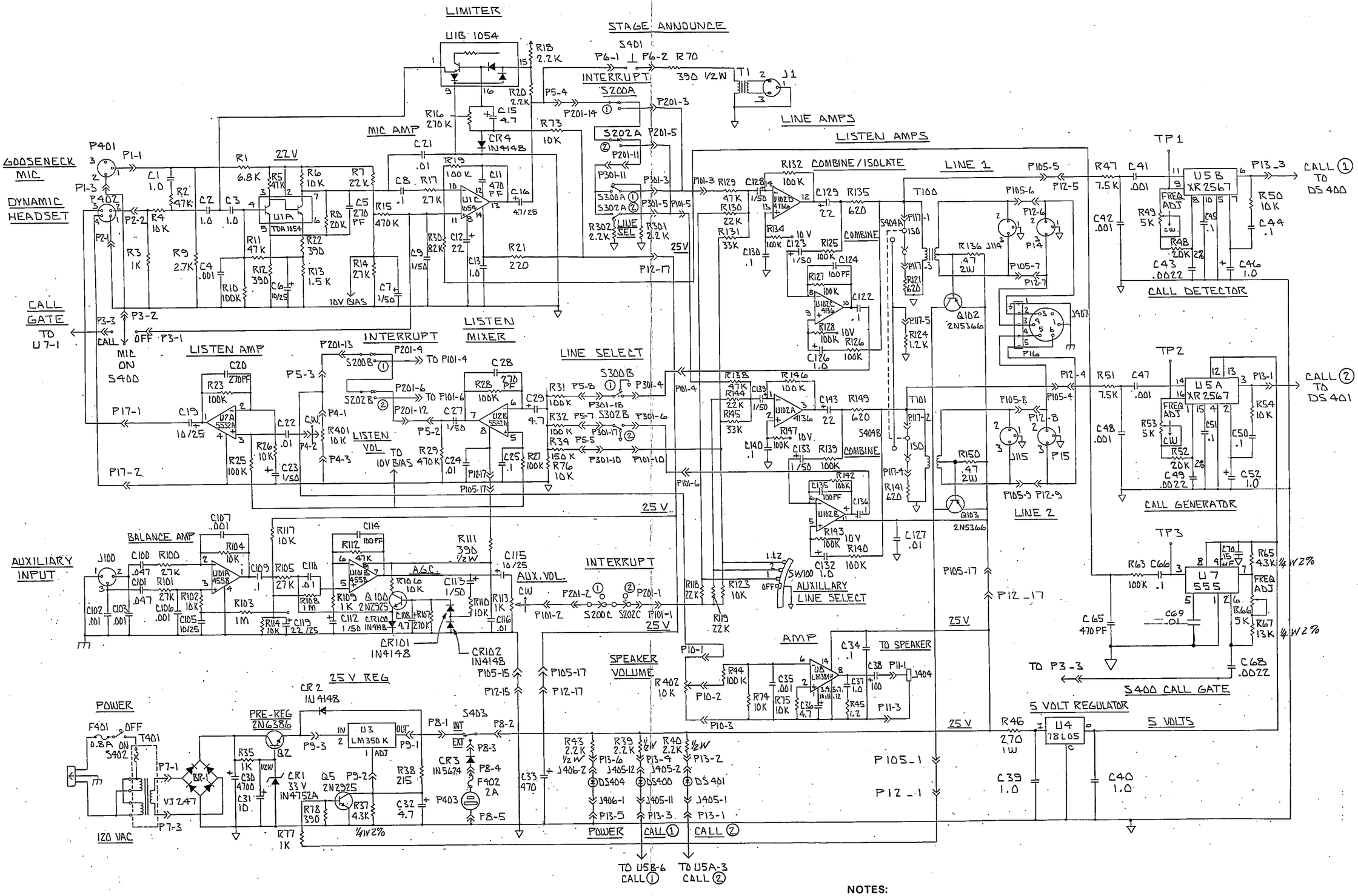


Figure 7. Bottom PC Board Assembly



NOTES:

1. ALL RESISTORS IN OHMS, ¼W, ±5% UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE NOTED.
3. THIS SCHEMATIC SUBJECT TO CHANGE TO ACCOMMODATE DESIGN IMPROVEMENTS.

96560, C

Figure 8. Schematic Diagram

3.2 ELECTRICAL PARTS

All capacitors in microfarads unless noted.
All resistors in ohms, ¼ watt, ±5% unless noted.

REF NO.	DESCRIPTION	PART NO.
	Capacitors	
C1	Electrolytic, 1, 50V	51821-106
C2,C3	Ceramic, 1, 50V, ±20%	52676-016
C4	Disc, 0.001, 500V, ±10%	52157-022
C5	Disc, 270 pF, 500V, ±10%	52157-013
C6	Electrolytic, 10, 25V	51821-020
C7	Electrolytic, 1, 50V	51821-106
C8	Polyester, 0.1, 100V, ±5%	52708-024
C9	Electrolytic, 1, 50V	51821-106
C11	Disc, 470 pF, 500V, ±10%	52157-017
C12	Electrolytic, 22, 25V	51821-081
C13	Ceramic, 1, 50V, ±20%	52676-016
C15,C16	Electrolytic, 4.7, 25V	51821-079
C19	Electrolytic, 10, 25V	51821-020
C20	Disc, 270 pF, 500V, ±10%	52157-013
C21,C22	Polyester, 0.01, 250V, ±5%	52708-012
C23	Electrolytic, 1, 50V	51821-106
C24	Disc, 0.01, 100V, ±20%	52157-235
C25	Polyester, 0.1, 100V, ±5%	52708-024
C27	Electrolytic, 1, 50V	51821-106
C28	Disc, 270 pF, 500V, ±10%	52157-013
C29	Electrolytic, 4.7, 25V	51821-079
C30	Electrolytic, 4700, 50V	52734-020
C31	Electrolytic, 10, 50V	51821-110
C32	Electrolytic, 4.7, 25V	51821-079
C33	Electrolytic, 470, 35V	51821-012
C34	Ceramic, 0.1, 50V, ±20%	52676-009
C35	Disc, 0.001, 500V, ±10%	52157-022
C36	Electrolytic, 4.7, 25V	51821-079
C37	Ceramic, 1, 50V, ±20%	52676-016
C38	Electrolytic, 100, 35V	51821-529
C39,C40	Ceramic, 0.1, 50V, ±20%	52676-016
C41,C42	Disc, 0.001, 500V, ±10%	52157-022
C43	Ceramic, 2200 pF, 50V	35694-034
C44,C45	Polyester, 0.1, 100V, ±5%	52708-024
C46	Electrolytic, 1, 50V	51821-106
C47,C48	Disc, 0.001, 500V, ±10%	52157-022
C49	Ceramic, 2200 pF, 50V	35694-034
C50,C51	Polyester, 0.1, 100V, ±5%	52708-024
C52	Electrolytic, 1, 50V	51821-106
C65	Disc, 470 pF, 500V, ±10%	52157-017
C66	Ceramic, 0.1, 50V, ±20%	52676-009
C68	Ceramic, 2200 pF, 50V	35694-034
C69	Disc, 0.01, 100V, ±20%	52157-235
C70	Ceramic, 0.15, 50V, ±20%	52676-014
C100,C101	Ceramic, 0.047, 25V	52158-033
C102,C103	Ceramic, 0.001, 500V, ±10%	52157-022
C105	Electrolytic, 10, 25V	51821-020
C106,C107	Disc, 0.001, 500V, ±10%	52157-022
C108	Electrolytic, 4.7, 25V	51821-079
C109	Polyester, 0.1, 100V, ±5%	52708-024
C110	Ceramic, 0.01, 50V, ±20%	52676-001
C112,C113	Electrolytic, 1, 50V	51821-106
C114	Disc, 100 pF, 500V, ±10%	52157-008
C115	Electrolytic, 10, 25V	51821-020
C116	Ceramic, 0.01, 50V, ±20%	52676-001
C119	Electrolytic, 22, 25V	51821-081
C122	Polyester, 0.1, 100V, ±5%	52708-024
C123	Electrolytic, 1, 50V	51821-106
C124	Disc, 100 pF, 500V, ±10%	52157-008
C126	Electrolytic, 1, 50V	51821-106
C127	Ceramic, 0.01, 50V, ±20%	52676-001
C128	Electrolytic, 1, 50V	51821-106
C129	Electrolytic, 22, 25V	51821-081
C130	Polyester, 0.1, 100V, ±5%	52708-024
C132,C133	Electrolytic, 1, 50V	51821-106
C135	Disc, 100 pF, 500V ±10%	52157-008
C136	Polyester, 0.1, 100V, ±5%	52708-024

REF NO.	DESCRIPTION	PART NO.
	Capacitors (Cont)	
C139	Electrolytic, 1, 50V	51821-106
C140	Polyester, 0.1, 100V, ±5%	52708-024
C143	Electrolytic, 22, 25V	51821-081
	Diodes and LEDs	
BR1	Bridge Rectifier, VJ247, 70V	52313-000
CR1	Zener, 33V, 1N4752A	51302-020
CR2	Signal, 1N4148	52228-000
CR3	Rectifier, 1N5624, 200V	56073-000
CR4	Signal, 1N4148	52228-000
CR100-CR102	Signal, 1N4148	52228-000
DS400,DS401	Superbrite, Red	58683-000
DS404	Diffused Yellow	58680-002
	Fuses	
F401	Slo-Blo, 0.8 Amp (120V units)	50547-132
	Slo-Blo, 0.4 Amp (220V units)	50547-189
F402	Slo-Blo, 2 Amp	50547-084
	Connectors	
J1	Audio, Female	59893-001
J100	Audio, Female	59893-001
J114,J115	Audio, Female	59893-001
J404	Jack, Compact Phone, 3-Cond	35347-001
J407	Audio, Female	50995-006
P1	Wafer, Friction Lock, 3-Pin	57721-003
P2	Wafer, Friction Lock, 2-Pin	57721-002
P3,P4	Wafer, Friction Lock, 3-Pin	57721-003
P5	Wafer, Friction Lock, 10-Pin	57721-010
P6	Wafer, Friction Lock, 2-Pin	57721-002
P7	Wafer, Male, 3-Pin	57705-003
P8	Wafer, Male, 5-Pin	57705-005
P9	Wafer, Male, 3-Pin	57705-003
P10,P11	Wafer, Friction Lock, 3-Pin	57721-003
P12	Wafer, Friction Lock, 17-Pin	57721-017
P13	Wafer, Friction Lock, 6-Pin	57721-006
P14,P15	Audio, Male, PC Mount	59892-001
P16	Wafer, Friction Lock, 5-Pin	57721-005
P17	Wafer, Friction Lock, 2-Pin	57721-002
P101	Wafer, Friction Lock, 10-Pin	57721-010
P105	Wafer, Friction Lock, 17-Pin	57721-017
P117	Wafer, Friction Lock, 5-Pin	57721-005
P401	Socket, Mirophone	59932-000
P402	Audio, Male, Panel Mount	50994-004
P403	Plug	51106-002
	Transistors	
Q2	2N6386	54650-002
Q5	2N2925	51547-001
Q100	2N2925	51547-001
Q102,Q103	2N5366	51820-000
	Resistors & Potentiometers	
R1	6.8K	52154-261
R2	47K	52154-241
R3	1K	52154-281
R4	10K	52154-257
R5	47K	52154-241
R6	10K	52154-257
R7	22K	52154-249
R8	20K	52154-250
R9	2.7K	52154-271
R10	100K	52154-233
R11	47K	52154-241
R12	390	52154-291
R13	1.5K	52154-277
R14	27K	52154-247
R15	470K	52154-217

REF NO.	DESCRIPTION	PART NO.
	Resistors & Pots (Cont)	
R16	270K	52154-223
R17	27K	52154-247
R18	2.2K	52154-273
R19	100K	52154-233
R20	2.2K	52154-273
R21	220	52154-297
R22	390	52154-291
R23	100K	52154-233
R25	100K	52154-233
R26	10K	52154-257
R27,R28	100K	52154-233
R29	470K	52154-217
R30	82K	52154-235
R31,R32	100K	52154-233
R34	150K	52154-229
R35	1K, ½W	52154-458
R37	4.3K, 2%	52155-266
R38	215, 1%	54042-215
R39,R40	2.2K, ½W	52154-450
R43	2.2K, ½W	52154-450
R44	100K	52154-233
R45	1.2	52154-907
R46	270, 1W	52154-649
R47	7.5K	52154-260
R48	20K, 2%	52155-250
R49	Variable, 5K	57148-068
R50	10K	52154-257
R51	7.5K	52154-260
R52	20K, 2%	52155-250
R53	Variable, 5K	57148-068
R54	10K	52154-257
R63	100K	52154-233
R65	4.3K, 2%	52155-266
R66	Variable, 5K	57148-068
R67	13K, 2%	52155-254
R70	390, ½W	52154-468
R73-R76	10K	52154-257
R77	1K	52154-281
R78	390	52154-291
R100,R101	27K	52154-247
R102	10K	52154-257
R103	1M	52154-209
R104	10K	52154-257
R105	27K	52154-247
R106	10K	52154-257
R107	270K	52154-223
R108	1M	52154-209
R109	1K	52154-281
R110	10K	52154-257
R111	390, ½W	52154-468

REF NO.	DESCRIPTION	PART NO.
	Resistors & Pots (Cont)	
R112	47K	52154-241
R113	Variable, 1K	57181-002
R114	10K	52154-257
R117	10K	52154-257
R118,R119	22K	52154-249
R121	620	52154-286
R123	10K	52154-257
R124	1.2K	52154-279
R125-R128	100K	52154-233
R129	47K	52154-241
R130	22K	52154-249
R131	33K	52154-245
R132	100K	52154-233
R134	100K	52154-233
R135	620	52154-286
R136	0.47, 2W	51019-117
R138	47K	52154-241
R139,R140	100K	52154-233
R141	620	52154-286
R142,R143	100K	52154-233
R144	22K	52154-249
R145	33K	52154-245
R146,R147	100K	52154-233
R149	620	52154-286
R150	0.47, 2W	51019-117
R401,R402	Potentiometer, 10K	57189-005
	Switches	
SW100	Rotary, 4-Postion	57556-000
S400	Paddle, SPDT	57551-000
S401	Miniature Pushbutton	57574-000
S402	Rocker, SPST	57551-001
S403	Toggle, SPDT	57481-000
S404	Rocker, DPDT	57555-001
	Transformers	
T1	Line	56741-000
T100,T101	Output	52444-002
T401	Power, 120/220V	96163-001
	Integrated Circuits	
U1	TDA1054	53256-000
U2	Dual Low-Noise Op Amp	53295-001
U3	LM350K	59568-000
U4	78L05	54680-005
U5	XR2567CP	59557-000
U7	NE555	53257-000
U8	LM384N	53236-000
U101	RC4558	52287-000
U102	RC4136N	53264-000

96559, K
96557, C
96461, J